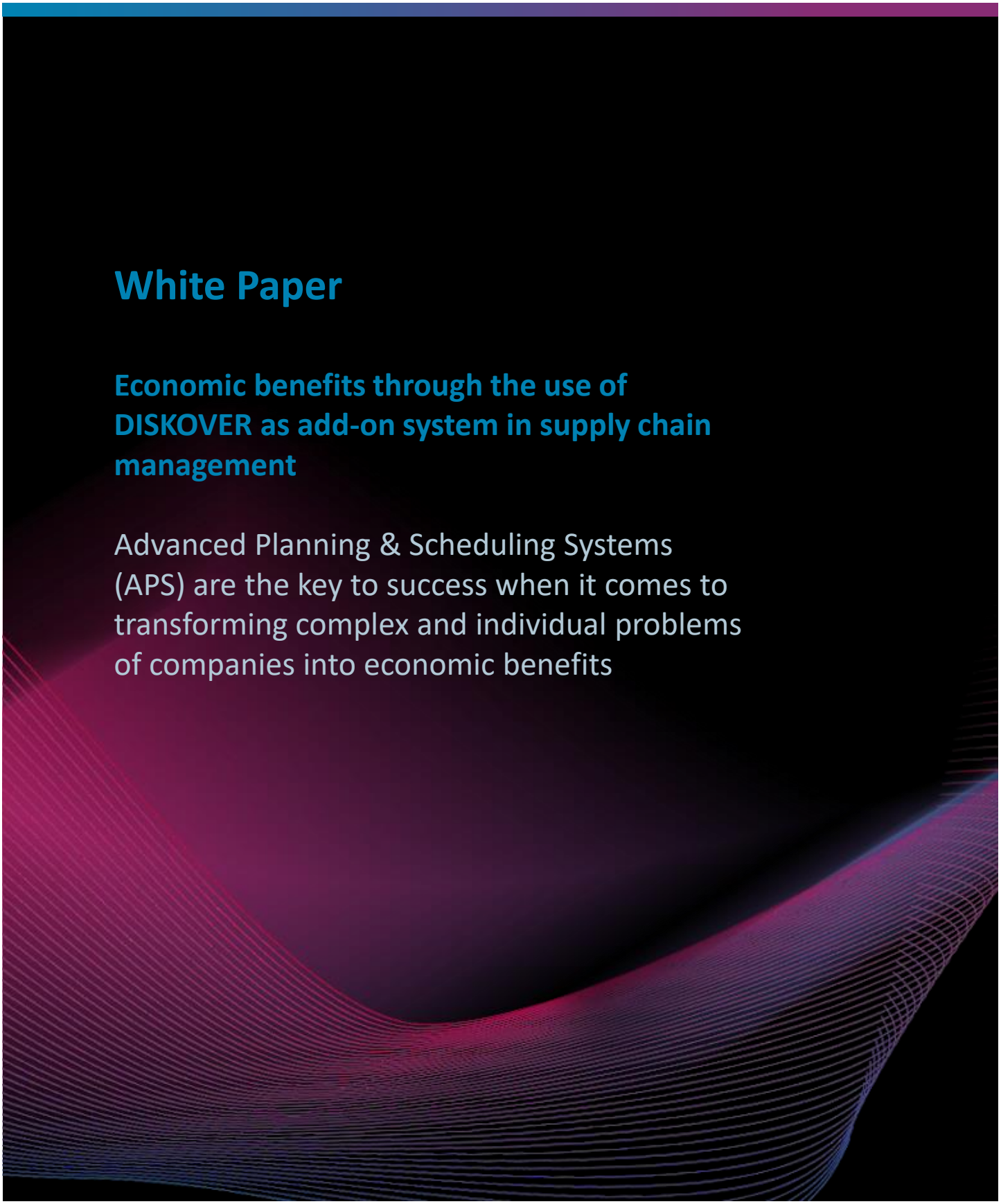
DISKOVER®
SCT SOFTWARE

SCT GmbH Supply Chain Technologies

White Paper

Economic benefits through the use of DISKOVER as add-on system in supply chain management

Advanced Planning & Scheduling Systems (APS) are the key to success when it comes to transforming complex and individual problems of companies into economic benefits



Economic advantages through the use of DISKOVER as an add-on system in supply chain management

Like any operational measure, the use of DISKOVER in the company must be worthwhile from an economic perspective. For this reason, this document is intended to provide you with information and assistance so that you can assess for yourself whether implementing DISKOVER makes sense.

The effects and numerical values listed below come from discussions with user companies, from empirical measurements and from project experience. They do not meet the requirements of a statistically representative survey. Due to the different application variants of DISKOVER in the various companies as well as the very heterogeneous initial situations and the large variety of different industries from which the DISKOVER user companies come, the basis for a statistically representative survey is lacking.

When using DISKOVER, a distinction must be made between quantifiable economic improvement effects and qualitative improvement effects, whereby not all quantitative effects can be converted into hard economic figures and many qualitative improvement effects can have drastic monetary effects.

The hard facts

The main quantitative effects resulting from the use of DISKOVER concern

- inventory reduction,
- improving delivery readiness and
- the reduction of planning and scheduling effort.

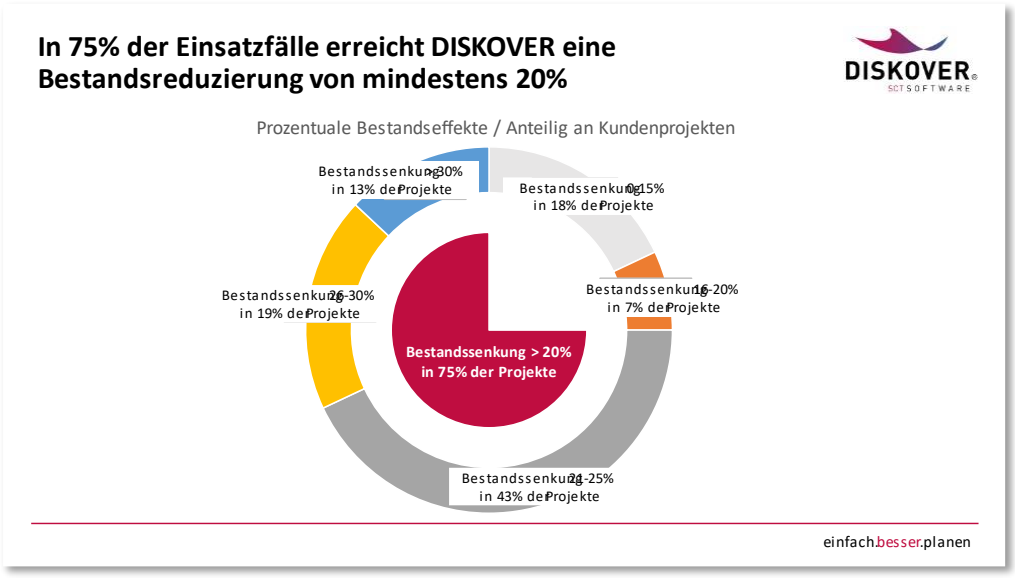
Another quantitative effect does not concern the results that can be achieved by using DISKOVER, but the operational benefits in the running costs of the DISKOVER system through the Fullservice concept.

Inventory reduction leads to liquidity release and reduced storage costs

There is extensive knowledge available regarding the inventory reduction that can be achieved through the use of DISKOVER. Since DISKOVER is also used as an analysis and simulation tool in consulting projects by our parent company, the Abels & Kemmner Group, the findings here result not only from the operational use of DISKOVER, but also from its use in consulting projects.

In 75% of cases, DISKOVER achieves an inventory reduction of at least 20%.

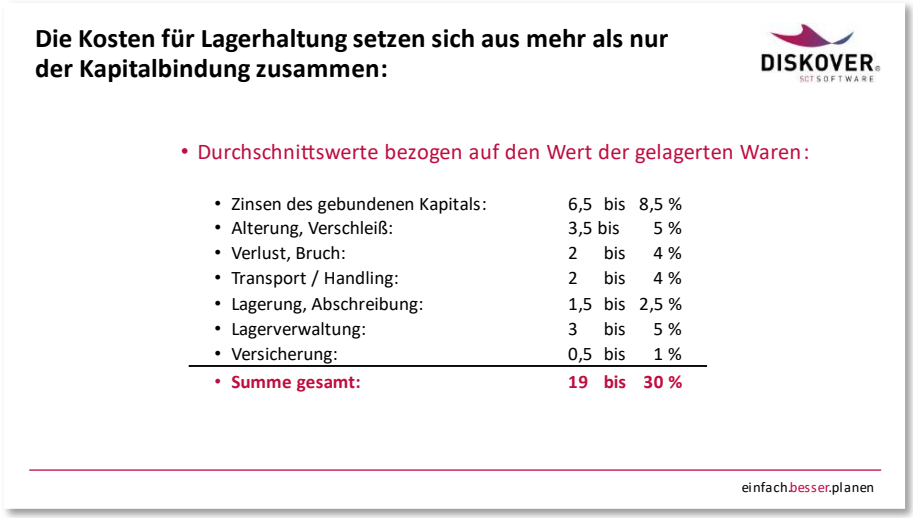
The following graphic breaks down the savings potential in terms of amount and frequency.



Reducing inventory not only reduces capital commitment, but also leads to reduced running costs. The economic benefit of being able to use the liquidity gained elsewhere depends on the company's liquidity requirements and cannot be answered in general terms. However, the reduction in running storage costs can be estimated by determining the storage costs for the inventory under consideration. The range of the individual components of storage costs, as they have resulted from analyses in numerous consulting projects, can be seen in the graphic below.

The table may serve as a suggestion for determining your own storage costs. The supposedly high values for the interest on tied-up capital result from the fact that many companies calculate the costs of capital investment. Internal rates of Return (IIR) which are significantly higher than the usual market cost of capital and at least partially take into account the opportunity costs of alternative investments that cannot be realised due to the capital commitment.

Since the components of the storage costs are imputed costs, it is necessary to evaluate on a company-specific basis whether the respective cost items are directly proportional to the inventory reduction, whether the costs change in a fixed step or whether they are independent of the inventory level. Since the inventory reduction effects that are aimed for through the use of DISKOVER are intended to have a long-term effect, the consultants at Abels & Kemmner recommend multiplying the imputed cost items by a factor between 0 and 1 and then adding them up.



Die Kosten für Lagerhaltung setzen sich aus mehr als nur der Kapitalbindung zusammen:

DISKOVER SCT SOFTWARE

- Durchschnittswerte bezogen auf den Wert der gelagerten Waren:

• Zinsen des gebundenen Kapitals:	6,5	bis	8,5 %
• Alterung, Verschleiß:	3,5	bis	5 %
• Verlust, Bruch:	2	bis	4 %
• Transport / Handling:	2	bis	4 %
• Lagerung, Abschreibung:	1,5	bis	2,5 %
• Lagerverwaltung:	3	bis	5 %
• Versicherung:	0,5	bis	1 %
• Summe gesamt:	**19**	**bis**	**30 %**

einfach.besser.planen

Cost items that are completely proportional to the inventory level are weighted with 1 and are therefore fully included; items for which no changes are expected for the company in the long term despite inventory reduction are weighted with 0 and are therefore excluded. Cost items with medium-term change potential are pragmatically weighted with a factor of 0.5.

LaHowever, maintenance costs do not have to be calculated costs. They can also be directly attributable costs. If, for example, external warehouses have to be rented, there are specific costs involved. Typically, in such cases, costs are charged per storage process, per removal process and per day of storage. If the inventory reduction achieved with DISKOVER makes it possible to close an external warehouse completely, all costs are eliminated. If it is only possible to reduce the inventory in the external warehouse by a certain percentage, then the costs per day of storage will fall by the same percentage on average.

We recommend that you only expect a reduction in this cost item. It is much more complex to assess in advance how the number of inbound and outbound processes will change as a result of using DISKOVER. If this is a significant factor in your economic evaluation, the expected change in the inbound and outbound processes can outputs in DISKOVER by means of simulation as part of a pre-analysis project.

On average, the savings potential for work in progress is 40% to 50%, with considerable variation in the results of individual companies due to their very heterogeneous starting situations and production structures.

In a number of cases, the use of DISKOVER has made it possible to avoid the need to build new warehouses or rent external warehouses. In this case, the quantifiable economic effects are immediately apparent.

In addition to assessing the economic efficiency of using DISKOVER, it may also be interesting to look at the performance in comparison to other systems. Since Abels & Kemmner uses DISKOVER's simulation functionality in consulting projects for logistics optimization, there are occasional situations in which DISKOVER is used to determine inventory improvement potential and the measures required to achieve this, even though the consulting customers use add-on systems from competitors. Experience from such cases shows that DISKOVER achieves the same delivery readiness with 10% less inventory than other systems.

Using DISKOVER not only increases liquidity and saves on storage costs, but more clever planning of production orders also makes it possible to reduce work in progress.

Improving delivery readiness

In almost all cases where DISKOVER is used, the value-weighted overall delivery readiness of the article portfolio improves while simultaneously reducing inventory levels. This double effect arises because in many cases the wrong inventory is on the wrong articles.

In practice, however, the economic benefit of improved delivery readiness cannot be calculated using a simple formula. In addition, a distinction must be made between the delivery readiness of an article, the delivery readiness of child order item level and the readiness to deliver at the customer order level. Only the item-related readiness to deliver can be recorded statistically and defined as a default value. However, an overall better readiness to deliver at the item level also leads to better readiness to deliver at the order item level and at the customer order level.

The general tenor of numerous calculations is that a yield increase potential of 4-7% can be achieved through improved delivery readiness.

An article-related delivery readiness of 98%, for example, means that 98% of the material quantity required within the period under review can be provided on time, while 2% of the quantity cannot be delivered immediately. Only if the undeliverable quantity leads to an immediate loss of sales can a change in delivery readiness be directly converted into a change in sales and earnings. In many cases, both in the b-to-b as in b-to-c environment, however, there is the possibility of supplying missing quantities or making them available with the next delivery, so that a slightly reduced or increased willingness to deliver by customers is not rewarded or penalized by a decrease or increase in sales. If customer order quantities are regularly not fully met, this can also lead to a loss of customers and thus sales and earnings in the medium term..

For a pragmatic assessment of the benefits of improved delivery readiness, it may be sufficient to weight the theoretical additional sales or profit with a factor between 0 (even if deliveries are persistently incomplete, the customer will not abandon the contract) and 1 (missing delivery quantities are immediately procured by the customer from another source and mean a complete loss of sales).

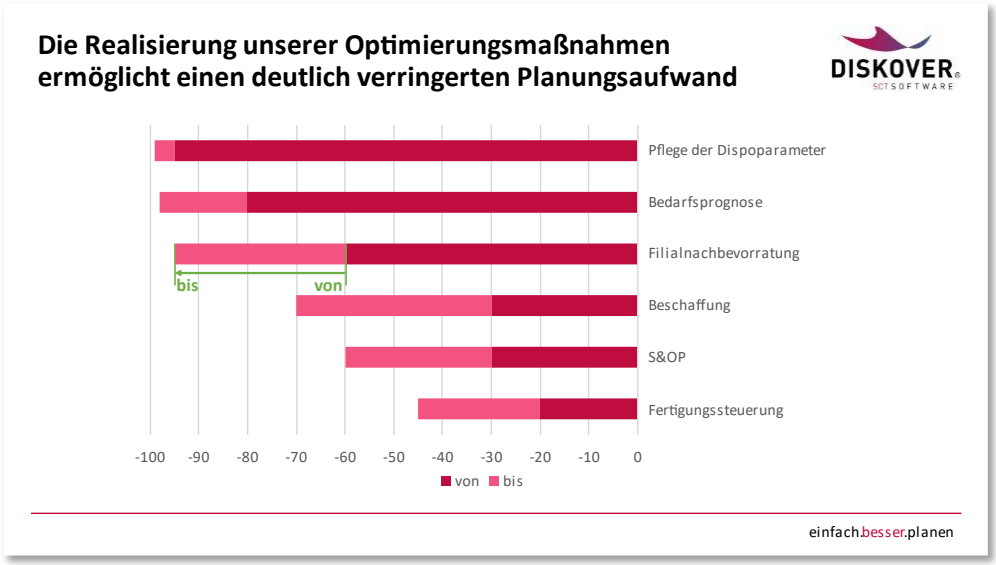
For many companies, insufficient delivery readiness also manifests itself in the form of special trips or contractual penalties, so that if delivery readiness improves, costs can be expected to be reduced. Each company must estimate for itself how much these costs are likely to be reduced.

Process automation

A further significant economic advantage of using a DISKOVER system is the reduced planning and maintenance effort for users, the relief for users and the increased automation.

The extent to which planning processes can be automated depends on the type of planning involved. The greatest potential for reducing costs arises in the replanning of store inventories, the least in production control.

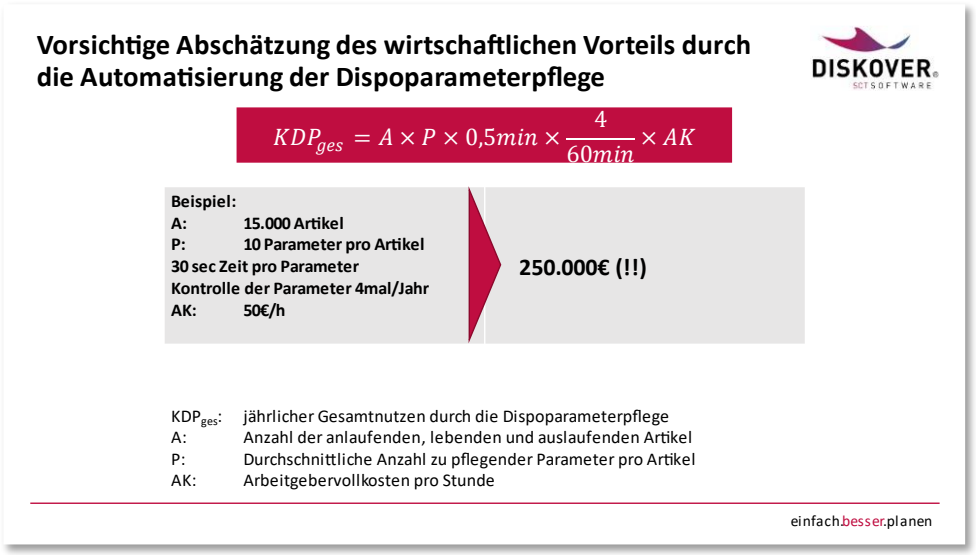
The picture shows the spectrum of reduction potential for different planning processes.



Dispo parameter maintenance

Thanks to the sophisticated rules verified and optimized using simulation, which can be used to automate the maintenance of the scheduling parameters in DISKOVER, for example, the maintenance effort can be reduced by 95% to 99%. But what if your master data was previously poor and was not maintained by employees at all, so that no maintenance effort has been incurred so far? In this case, the benefit is far greater than the time that would have been saved if the scheduling parameters had already been properly maintained today. In this case, we recommend that you estimate the benefit of maintaining the scheduling parameters based on the personnel costs that you would have had to spend on proper master data maintenance without using DISKOVER.

The savings or costs of a ordinary overdraft parameter maintenance are from the companies massively underestimated.

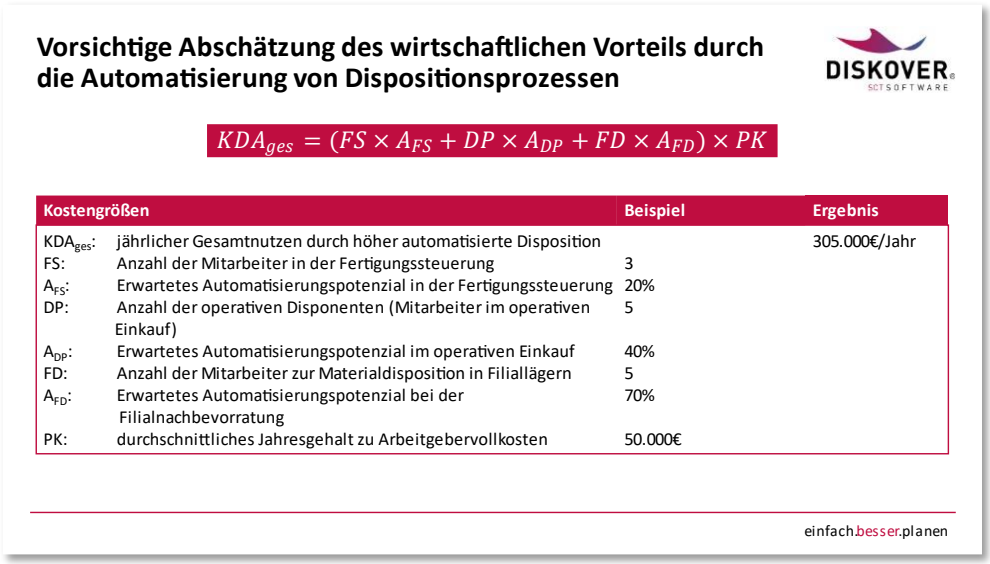


This calculation, however large the figures may seem, is very conservative because it does not take into account the economic benefit that results from correct master data, but assumes that employees would be able to set the planning parameters correctly if they had enough time to maintain the data, which is not the case in most cases. This is not necessarily due to the ability of your users. Even experienced specialists could not do better. It is more because a lot of master data cannot be reliably set correctly even with good theoretical and practical knowledge, and the correct values can only be found by means of simulation. The dynamic interplay of requirements, forecasts, value streams and planning decisions in the company and throughout the entire supply chain is so complex that it can no longer be understood using common sense alone.

There is also considerable potential for savings in the automation of scheduling.

Greater automation of scheduling

The economic potential of the higher automation of planning made possible by DISKOVER can be easily operationalized using the full-time equivalent. The full-time equivalent represents the number of full-time employees calculated from the time shares of various employees. Many people are often involved in the rescheduling of branch warehouses, each of whom only spends part of their working time on this task.



Vorsichtige Abschätzung des wirtschaftlichen Vorteils durch die Automatisierung von Dispositionsprozessen

DISKOVER SCT SOFTWARE

$$KDA_{ges} = (FS \times A_{FS} + DP \times A_{DP} + FD \times A_{FD}) \times PK$$

Kostengrößen		Beispiel	Ergebnis
KDA_{ges}:	jährlicher Gesamtnutzen durch höher automatisierte Disposition		305.000€/Jahr
FS:	Anzahl der Mitarbeiter in der Fertigungssteuerung	3	
A_{FS}:	Erwartetes Automatisierungspotenzial in der Fertigungssteuerung	20%	
DP:	Anzahl der operativen Disponenten (Mitarbeiter im operativen Einkauf)	5	
A_{DP}:	Erwartetes Automatisierungspotenzial im operativen Einkauf	40%	
FD:	Anzahl der Mitarbeiter zur Materialdisposition in Filiallägern	5	
A_{FD}:	Erwartetes Automatisierungspotenzial bei der Filialnachbevorratung	70%	
PK:	durchschnittliches Jahresgehalt zu Arbeitgebervollkosten	50.000€	

einfach.besser.planen

It is a mistake to assume that the productivity potential that results from the automation of processes can only be increased by laying off staff. In scheduling in particular, employees rarely manage to handle all the tasks that actually need to be done. The lack of maintenance of scheduling parameters is just one example of this. Relieving employees of routine tasks so that they can take care of tasks that have previously remained open can sometimes bring companies a much greater economic advantage. Simply replacing staff with software saves on personnel costs, but does not solve the problems caused by tasks that have previously been left undone. It is therefore often more sensible to use the personnel capacity gained for these tasks. This generally brings more benefit than the associated personnel costs. For this reason, the formulas in Figures 5 and 6 do not speak of personnel cost savings, but of the overall benefit.

Automation of demand forecasting

When assessing the benefits of greater automation in demand forecasting, one generally faces three different scenarios. Either poor forecasts determined by the ERP system in the past were simply processed further, or the planners incorporated their own assessment of future requirements into the restocking decisions for materials, or there are actually people in the company who are explicitly responsible for creating demand forecasts.

In the latter case, the benefit of a more automated demand forecast is calculated in a similar way to the calculations for planning automation. In the situation where planners have included their own future expectations in their planning decisions, these implicit demand forecasts are practically lost in the general planning work; any additional economic benefit from forecast automation in addition to planning automation does not need to be taken into account.

In the third scenario, where poor forecasts previously prepared by the ERP system were simply used for planning, the economic benefit of DISKOVER is already included in the inventory reduction and the improvement in delivery readiness. An overall benefit equivalent resulting from the automation of the demand forecast, as was used for planning parameter maintenance, would double the economic effects at this point.

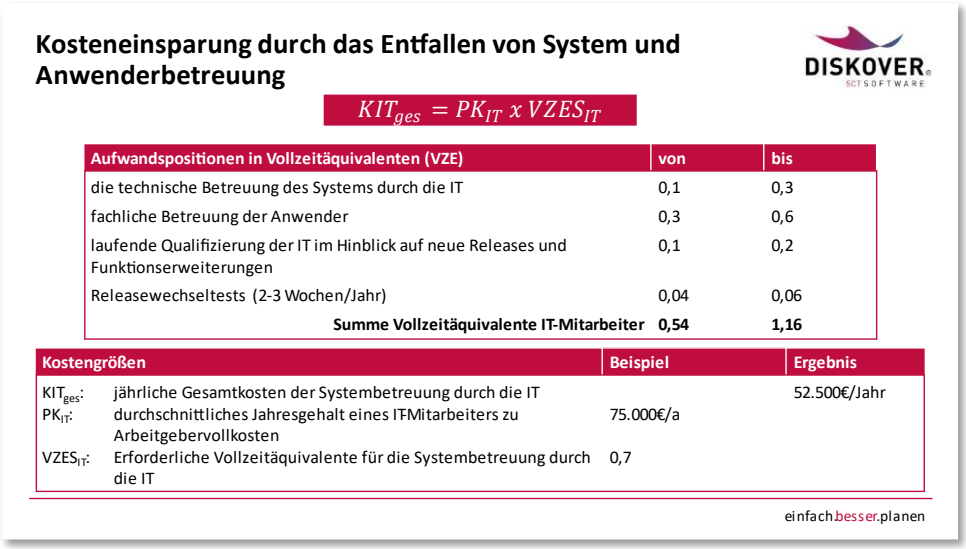
Cost savings potential through the Fullservice concept of DISKOVER

Operating a powerful add-on system such as DISKOVER always requires specialist system support, just as you know from your ERP system. The IT support effort can be divided into:

- the technical support of the system
- the professional support of users
- the ongoing qualification of IT with regard to new releases and functional extensions as well as
- effort for release change tests

These efforts can be eliminated when using DISKOVER, as theFull-Service concept of DISKOVER, these services are provided by the ServiceCenter and the developers of SCT GmbH within the framework of the rental licenses.

The reduction in IT expenditure on technical care and user support must not be forgotten.



Kosteneinsparung durch das Entfallen von System und Anwenderbetreuung

$$KIT_{ges} = PK_{IT} \; x \; VZES_{IT}$$

Aufwandspositionen in Vollzeitäquivalenten (VZE)	von	bis
die technische Betreuung des Systems durch die IT	0,1	0,3
fachliche Betreuung der Anwender	0,3	0,6
laufende Qualifizierung der IT im Hinblick auf neue Releases und Funktionserweiterungen	0,1	0,2
Releasewechseltests (2-3 Wochen/Jahr)	0,04	0,06
Summe Vollzeitäquivalente IT-Mitarbeiter	**0,54**	**1,16**

Kostengrößen		Beispiel	Ergebnis
KIT_{ges}:	jährliche Gesamtkosten der Systembetreuung durch die IT		52.500€/Jahr
PK_{IT}:	durchschnittliches Jahresgehalt eines IT-Mitarbeiters zu Arbeitgebervollkosten	75.000€/a	
$VZES_{IT}$:	Erforderliche Vollzeitäquivalente für die Systembetreuung durch die IT	0,7	

einfach.besser.planen

Qualitative improvement potential

In addition to economic benefits that can be quantified in monetary terms, there are also a whole series of improvement effects that cannot be expressed in monetary terms, or are difficult to do so. In many selection projects, these criteria play an important role, sometimes the most important one.

The essentials in view

Through the alarm signals displayed by DISKOVER and the associated management by exception Users can intervene where necessary and decisions are made in a timely manner.

All information at a glance

DISKOVER makes it possible to provide and display a wide range of important data in a single view. This means that every user can be provided with exactly the information they need to make their decisions. There is no longer any risk that employees will overlook the need for action or that they will not obtain important information because it would be too much work for them.

Transparency in the supply chain

The supply network overview in DISKOVER enables users to have a direct overview of all the key metrics of the supply chain. Lack of availability in the supply chain is identified at a glance.

For the sake of the environment

The optimization algorithms in DISKOVER for the clever filling of transport units (full Truck Load, full Container Load, armament campaign-oriented Manufacturing) help reduce freight costs and CO_2-Reduce output and reduce setup effort and costs. The powerful functions for start-up and phase-out management of items reduce the volume of scrap for material that is no longer needed.

Close to the customer's needs

Sophisticated functions for project and action planning as well as for supporting the S&OP process help to identify material or resource bottlenecks at an early stage and thus improve the options for responding.

Real economic batch sizes

Economical batch sizes represent a major lever for reducing costs. However, the theoretically simple calculation of economic batch sizes often does not improve costs in practice, since the correct one of the various calculation variants for economic batch sizes must be selected depending on the situation. In contrast to all other systems known to us, DISKOVER can determine the correct economic batch sizes using empirical simulation based on historical data.

Job appreciation

The interaction of simulation, rules and optimization algorithms in DISKOVER not only relieves users of routine tasks and allows them to concentrate on the essentials. Users are also freed from the situation of always having to keep up with the situation and make ordering decisions themselves or readjust the suggestions of the ERP system. By using DISKOVER, they finally get “ahead of the situation” and become masters of the situation. This is an important prerequisite for attracting qualified personnel for the challenging task of material planning in the future.

Better overview

By using DISKOVER, employees gain a much better overview of the supply and inventory situation throughout the entire supply chain. This increases employee motivation and reduces their physical and mental stress.

Continuous Improvement

DISKOVER's simulation options make it easy for users without a broad theoretical background to improve planning and scheduling mechanisms. In our experience, this increases the motivation of some users to continue improving the processes and mechanisms.

DISKOVER®
SCT SOFTWARE

SCT GmbH
Supply Chain Technologies

Kaiserstraße 100
52134 Herzogenrath
Germany

DE: +49 2407 9565-70
E-Mail: info@diskover.de

www.diskover.de